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NASCENT STAGES AND THEIR PEDAGOGICAL SIGNIFICANCE.

By E. B. Bryan.

Introduction.

The general aims of education may be classed under two heads: (*a*) Those that emphasize the individual. (*b*) Those that emphasize society. There are those who hold that if all the latent powers of the child, mental, moral, and physical are developed fully and symmetrically with entire emphasis upon him as an individual, we not only get the best individual product possible in a given case but the best social product as well. On the other hand there are those who hold that inasmuch as the child is born of society, is a member of society, and is becoming more and more a potent member of society, his training should be given him with a view to the needs of society rather than to his individual needs, believing that thereby not only is the best social product assured but also that the best has been done for the individual as such.

There is truth in both these thoughts, and when they are reduced to their lowest terms, we have simply a question of relative emphasis of two fundamental factors in the aim of education. But whichever phase is emphasized, this surely is true, that any attempt at curriculum making or educational procedure which does not take into account the laws and stages of the development of the one to be taught, is apt to go wide of the mark and induce arrested development either by holding the child to work which belongs to a lower stage of development or by rushing him on precociously to work which presumes a development which he has not yet attained.

Therefore, from whatever standpoint we view the aim and problem of education, a knowledge of the stages in the development of people, of the abrupt turns and the deep places in the stream of human life, of the nascent periods, so to speak, of human development is of prime importance.

In educational literature many hints of the importance of such knowledge are found, and much of the work done in schools and colleges is purported to be based upon such knowledge; and yet, with the exception of the periods of pubescence and adolescence, it must be admitted, I think, that our information

has been very vague and limited and that the ground on which we have stood has for most part been only a feeling, variable as individuals are variable, that such and such things are true.

In general literature, the thought that human life is not an unbroken continuum but rather moves in great beats or stages is quite pronounced and dates back to very ancient times.

An historical study of religious ceremonies performed at certain ages shows how deeply the idea has worked itself into the religious consciousness. A brief but careful study of the contemporary religious consciousness has revealed the same thing, and the special studies upon conversion, backsliding and other religious phenomena bring out the same results.

The change of seasons, the succession of crops, special days for special things, all emphasize the thought that there are certain times that are peculiarly fitted for certain things.

The old faculty psychology dividing the mind, as it does, not only into intellect, sensibility, and will, but also into the chronological apartments of perception, memory, imagination, judgment, reason, etc., while largely the result of speculation, is doubtless to a degree both the result of this folk-consciousness and also a potent cause for the tenacity with which the educational world at large clings to the idea of successive stages in development.

Teachers and students have experienced that some things come comparatively easy in early years and other things in later years, and consciously or unconsciously arrive at the conclusion that there should be an adaptation of the kind and amount of work to the stage of development; *i. e.*, that certain times are ripe times for certain things.

A limited number of experiments upon animals, together with every day observations, tend very strongly to confirm this thought. The results of Spalding's (35)* work with the chick re-enforce the thought and James (20, Vol. II, p. 398) brings out the same thing in his chapter on Instinct.

Returns from two thousand teachers emphasize very strongly the fact that if children at certain times have a longing for, or show an aptitude in Drawing, Music, Manual Training, Athletics, etc., but are deprived of the opportunity for culture along these lines, they are apt to lose their interest or aptitude or both.

It is thought that children who become blind before a certain age are not apt to have visual images, while those who become blind after that age are apt to have visual images. The same thing is supposed to be true of the other senses, notably the sense of hearing.

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* The figures in parentheses refer to similar numbers in *Authorities Cited* at end of the article.

Donaldson (14, p. 37) says: "Development and the changes involved in growing old, are by no means synonomous, so that although in those animals with a fixed size there are always to be found undeveloped cells, yet it is not a correct inference that these cells are also young in the sense that they might still complete their development. It appears, rather, that the capacity for undergoing expansive change is transient, and that those cells which fail to react during the proper growing period of an animal have lost their opportunity forever."

The studies that Barnes (3) has made of children's interests show that the things in which children are apt to have a lively interest vary with age.

All of these things point to the possibility of more or less definite stages or nascent periods in development, and the purpose of this paper is to collect and formulate the evidence for such a theory in its application to human development, and to make pedagogical deductions from this evidence.

Hartwell (17) divides the first twenty-five years of life into four stages (1) Infancy from birth till the first dentition. (2) Childhood, from the first to the second dentition at seven or eight years of age. (3) Boyhood or Girlhood, from second dentition to puberty at thirteen or fourteen years of age. (4) Puberty and Adolescence, from thirteen to the beginning of the twenty-fifth year.

Lange (23) has four stages. (1) From birth to two years, highest rate of growth. (2) From two to twelve years, decreasing annual increments. (3) Twelve to fifteen years, mental growth. (4) Fifteen to twenty-one years, a sudden decrease in annual increments.

Zeissing (7, p. 255) found three stages. (1) One of decrease in the yearly increments of growth up to nine years. (2) Increase of yearly increments to the seventeenth year. (3) A later decrease.

Vierordt (7, p. 325) has seven stages. (1) From birth to eight months. (2) From eight months to seven or eight years. (3) From seven or eight years to fourteen years. (4) From fourteen or fifteen to twenty-one or twenty-two. And then early adult, later adult age to the sixtieth year, and old age. Clouston (11) divides the years of development into three stages. (1) From birth to seven. (2) From seven to thirteen. (3) From thirteen to twenty-five.

That there are varying rates of growth in the development of a child has been established beyond question. There is the seasonal rhythm now slow now fast, there is the variation due to nutrition, variation due to disease, and variation due to increase of function; so that the curve of development is not a straight line.

Also, it is pretty definitely known what an average child (if such a thing there be) is capable of at a given age. (We know, for example, that it does not walk and talk at six months but that it does at thirty-six.)

Special studies upon individual children have made much more definite the general notions of the unscientific but sympathetic observer of children. So that we have a vast amount of unorganized data for the work scattered here and there covering the entire developmental period. It is no part of the purpose of this study, therefore, to redemonstrate that the curve of life is a broken and not a straight line or even to make a contribution of new data. It is rather a work of organization and interpretation of facts worked out by various observations, researches and experiments with a view of finding what truth and significance there may be in the theory of nascent periods; what these nascent periods are in themselves; and what relation they bear to one another. For a convenient résumé of the many theories concerning the periods of childhood the reader is referred to Dr. Chamberlain's book on *The Child* (8a pp. 51–105).

The hope of fixing hard and fast limits for each or any of these stages is not entertained; the limits will vary with individuals as everything else does. But it is the hope to show on physiological and psychological grounds that in the development of the child there is a series of periods each more or less homogeneous in itself, but widely different from all the others, that each period serves as a propædeutic to the one that follows and that each is preceded by a relatively short transitional period characterized by mental and physical disturbances which serve as the time for rearrangement and preparation for the stage which is to follow. I wish then, in the light of what is found to be true of these periods, to make deductions of some the more obvious pedagogical principles.

I.

Infancy.

Following the months of pre-natal existence, comes birth with the first days of life's experience. Psychically, there come rolling in upon the child floods of sensations, meaningless in most part and of no present value to him. "All its senses," says Perez (27, p. 8), "are battered by repeated shocks of strange impressions, and it's wailing cries indicate how painfully these are felt." I think it questionable, however, whether the cries are due so much to the feeling of pain or whether they are merely reflexive. Clouston (12) I think, comes nearer the truth than Perez when he says that, "At birth a child is absolutely destitute of mental faculty. The thing does not ex-

ist. All competent observers agree on this point; and all newly-born children are equally mindless. There is no exception. But why does the child cry, and seem to feel pain, and move, and feed himself? Those at first are all automatic, or reflex actions unaccompanied by mind, the apparatus for performing which in the brain and spinal cord, is almost perfect at this time, while the mental apparatus is undeveloped. He breathes, too, as well as ever he will do, just because the group of nerve cells in the brain that produces and regulates the breathing movements is perfect at birth."

To quote the much used expression of Prof. James (20, p. 16) "The object which the numerous inpouring currents of the body bring to his consciousness is one big, blooming, buzzing confusion. That confusion is the baby's universe."

Physically, during the first week of life, the child looks like itself no two days in succession; it readjusts itself to the new environment; it breathes, it takes food through the mouth, every sense is appealed to by outer stimuli, a change in movement is possible, and the child becomes less plump and loses in weight. Perez (27, p. 10) says: "Up to the third day there is a diminution of between three and four ounces in their weight, and it is not till the sixth or seventh day that they get back to what they were at birth."

Bayard Holmes, M. D., (19) says: "During the first three or four days after birth there is a normal loss of weight of between 6.15 and 6.96 per cent. The average loss of weight is 222 grammes. This is followed by a rapid increase in weight, which is greatest during the second month."

It seems, therefore, that the first few days of the child's life are not a continuance of the pre-natal development, but serve rather as a transitional period, characterized by various psychical and physical disturbances, of readustment, and preparation for the stage which is to follow.

For some months following these earliest days, if the child be normal, there is a gradual development—not a development due so much to its reactions upon outer stimuli, but rather an unfolding of its life, the child remaining for most part passive in its relations to the outer world, being receptive rather than expressive.

By way of food, clothing, etc., it takes what is given it, its only means of expressing its disapproval being more or less unintelligible mimetic gesticulations and crying. During the first months it cannot balance its head; it cannot sit, nor stand; it cannot roll over, creep, walk, run, jump, or climb; it cannot talk; it cannot eat. Its ability as an aggressor is nil. Nevertheless its power to react, to express itself both mentally and physically, is increasing so that at the end of the third or fourth

month it can balance its head; in a few more months it can sit alone, can roll over, and is beginning to creep; and in most cases, by the end of the first year, the child is creeping as well as it ever will; it is beginning to stand, is trying to walk, and climbs whenever an opportunity is afforded.

It is no longer unable to see as at birth but has its senses of sight and hearing developed, so that on the one hand by the time it attains its first year, its visual accommodation is perfect; it looks away at objects and has pleasure in seeing people and things. On the other hand, its sense of hearing develops from the fourth day when it is able to hear a sharp noise, until at the close of the first year, it not only hears a noise at a distance but adjusts its head to catch the sound. (28 for fuller discussion.)

During this time the senses of touch, taste and smell have kept pace with the sense of hearing and sight, so that from the physical standpoint, the child is freeing itself from its passive condition at the time of birth and is becoming more and more capable of an active life. In language, which has both psychical and physical factors, the child during the first year or year and a half, has made sufficient start to make his most common wants known; it distorts its words in many ways, is incapable of speaking in sentences, and finds it necessary to supplement and to re-enforce its oral language with all kinds of gesticulations which are as unskillful as the language itself. It has reached that stage where it is "beginning to talk."

We have no evidence that in the first months of a child's life it does constructive mental work; it does not plan and project, it does not arrange means for the accomplishment of preconceived ends; its mental life is not one of expression. It has sentiments of taste, fears and anger, animal and human sympathies, and often shows signs of affection; it frequently manifests presence of will; it is capable of slight attention; and it can imagine, remember, and associate. Perez thinks that very young children are capable of elaborating ideas in the form of judgment, abstraction, comparison, generalization, etc. However this may be, it is evident that they are not capable of consecutive thought and are not constructively effective. To use the words of Dr, Lukens (25), "Beginning with the period of almost pure receptivity and open-mouthed wonder and delight in the senses, the child very soon, however, begins to react and, as Froebel says, to make the internal external. In most children, for instance, there is a more or less clearly marked period lasting from a few weeks to several months, during which they understand nearly or quite all that is said to them but have not themselves begun yet to speak."

In the Neuroses of Development, Clouston (II, p. 8) says:

"Sensation, common and special, come next soon after birth, and we have reason to believe that its peripheral, receptive apparatus and brain centers rapidly acquire perfection, though its future mental interpretation is a gradual and slow process. Most of the motor processes are more gradual in coming to perfection, and, indeed, cannot be said to have arrived to that stage till adolescence is nearly completed."

One may safely say, then, that during these first months(12 or 18) the sensory side of the child has developed much more rapidly than the motor side. It has been appealed to in a thousand ways; it has been awakened, but for most part it has been a recipient in a telling way, but not an effective actor. Its chief business has been to grow and not to act. This is shown by the fact that at the end of the first year the child should be three times as heavy as at birth and half as heavy as it will be at seven years of age (30). Its increase in height the first year will never be equalled in any succeeding year. The increase in brain weight should be five times as great (381 grammes, 945 grammes) as for any succeeding year.

On an average, the growth of the brain the first year is equal to more than one-third the entire weight at maturity (37).

It is important in this connection to know that out of every one thousand children under one year of age, two hundred twenty, or 22 per cent., die annually. "When we realize that the mortality from typhoid fever is less than ten per cent. of the individuals affected, and that the mortality during the first year of childhood is over 20 per cent., and therefore, infer that it is just twice as dangerous to be an infant under one year of age as to have typhoid fever, some idea of the delicacy of the individual at this period of life may be obtained." (10.)

The child's chief business, then, is to keep alive and grow.

The pedagogic question is, what are the best things that can come into the life of the child during these earliest months? Inasmuch as growing is its chief function, all the conditions for normal growth should be observed and all the causes of arrested development averted.

There should be no crowding; there should be little restraint and all undue excitement should be avoided, lest the delicate nervous system be irremediably shocked. One of the prime conditions of normal growth is a sufficient amount of wholesome food, but at this stage the variety of food should not be great if indeed it should not be limited to the one kind which nature has expressly provided. The child is unable to properly prepare solids for digestion and they should be kept from it until it is provided with teeth and proper strength to

use them effectively; and until the alimentary processes are confirmed. Another condition of normal growth is a sufficient amount and proper kind of clothing; many babies are smothered out of their wits and frozen out of their growth. Cleanliness, sunshine, and an abundant supply of fresh air are prime requisites. It is known to every one that diseases and traumatisms interfere with the growth of the child and often cause permanent arrest of development; a judicious amount of care should be exercised to prevent disaster from such causes. Only such things as are conducive to the child's good health should be observed during these first months.

Its development, always in pulse beats, should, however, in the first months have no abrupt turns but should be a continuous wave line—a rather steady and uniform movement. This is the stage of infancy.

II.

Transition from Infancy to Childhood.

Then comes at a year or a year and a half of age (the time varies greatly with individuals) another transitional period of disturbance and readjustment. The child creeps or walks; it gesticulates or talks; it is having its second summer; its temporary teeth are coming; it is taking new food; it is passing from the stage of gastro-enteric diseases to the stage of infectious diseases; there is great change in its anatomical proportions. It is breaking away from the quiet receptive stage of the infant and is becoming aggressive, as is shown in its impulse toward migration so well brought out by Kline (22), so that when the transition is finally made, it no longer waits and passively receives what is brought to it, but goes after what it wants. It can climb and walk and run; it no longer waits until its mother bare her breast to gratify its hunger, but eats many things and has teeth with which to eat; it no longer makes known it's wants by grunts and vague gesticulations, but uses language for this purpose.

"From birth when the brain weighs about fourteen ounces up to two years when it has attained twice and a half that weight, there has been a series of new evolutions or creations of new faculties. After that there takes place a gradual perfecting of those faculties (12)."

"During the first two years of life, says Dr. Christopher (10), the child, as a rule, possesses a considerable deposit of adipose tissue. As he passes the second year of life and enters the third there is considerable change in his anatomical proportions. He grows in height and loses rotundity and plumpness, and passes quite rapidly from a period recognized as that of

childhood. From then on the dangers to the life of the individual from factors in direct relation with its growth and development are not so great as before. Then comes the period of infectious diseases."

Thus, the child has moved out of the purely receptive stage of the infant, through a period of disturbance, into the active stage of childhood at about the close of the second year.

In Miss Shinn's observations (33, p. 411), the child's first successful attempt at creeping was at the age of nine months; at standing, the close of the ninth month; at climbing, eleven months; at walking, twelve months; at running, the close of the fourteenth month.

In Prof. Preyer's observations, the child's first successful attempt at creeping was at the thirteenth month; at standing, the close of the ninth month; at walking, the sixteenth month; at running, the sixteenth month.

In Mrs. Hall's observations, the child's first successful attempt at creeping was at the age of thirteen months; at standing, twelve months; at walking, fourteen months.

In Mrs. Beatty's observations, the first successful attempt at creeping was at the age of nine months; at standing, eleven months; at climbing, twelve months; at walking, fourteen months; at running, sixteen months.

In Miss Shinn's observations, the habit of creeping was complete at the age of ten months; of standing, twelve months; of climbing, at the close of the eleventh month: of walking, thirteen months; of running, fifteen months.

In Prof. Preyer's observations, the habit of creeping was complete at the age of fourteen months; of standing, at seventeen months; of walking, at eighteen months.

In Mrs. Hall's observations, the habit of creeping was complete at the age of fourteen months; of standing, at fourteen months; of walking, at sixteen months.

In Mrs. Beatty's observations, the habit of creeping was complete in the tenth month; of standing, at sixteen months; of walking, sixteen months; of running, at nineteen months or later.

III.

Childhood.

The development of the child from this time up to the seventh or eighth year, while not precisely the same during any succession of months or years, will be marked by no decided turns. The annual increase in height and weight will not vary greatly, but there will be a steady growth in both these directions, very much less rapid than in the first year, and less rapid than during the years that immediately follow this stage. The child is becoming more and more active, but owing to a lack of development of the peripheral muscles and the nerves that control them, his movements are unco-ordinated so that he is not effective as a producer, and activity is its own excuse for being.

Special sense education and the development of language con-

tinue at a rapid rate; the brain grows rapidly and approximates its full weight at the age of seven or eight. The sensory side is still in advance of the motor, but the child is by no means receptive only. His activity resulting in no outer product of value, finds its immediate value in itself, and so this is the stage of play. His keen sensory side catches up every suggestion, so that this is pre-eminently the stage of suggestion and imitation.

He gets most of his information first hand through the senses; further than this his mental life is made up chiefly of reproduced images and crude products of the imagination, although he is capable of carrying on many of the higher mental processes in a simple fashion.

Unless spoiled, the child at this age knows no such thing as shame, or modesty; it is apt to be selfish and fond of teasing and bullying as has been so well shown by Burk (6). His notions of right and wrong are not clearly defined and are very vacillating. Any hint of a moral code that he may possess, is not of his own making but has been impressed upon him from without through suggestion rather than by precept.

As in the former stage, growth was the prime desideratum, so here it is the thing of chief importance; not so much a quiet unfolding of the latent powers of the child as in the first stage, but rather a development through activity. But it must not be forgotten that the benefit derived here from the activity of the child is to be found in the child and not in the thing he does.

"During the period of brain growth in bulk up to the seventh year, when the full size and weight are almost attained, nutritive influences are of the largest value. How far this can reach positively, needs future demonstration, but is rich in promise; how far negatively, is well understood, but receives as yet insufficient support. There are during these early days more formative power and less output of energy exhibited." (36.)

All of the essentials for normal growth in the first stage should be diligently observed here as well. Nutrition, cleanliness, sunshine, fresh air, and care to prevent arrested development from diseases and traumatisms. But in addition to these things, there arises here the pedagogic problem of positive training, physical and mental.

The first question, of course, is this: Should the child receive any systematic training during this stage, or should we simply observe the foregoing conditions for growth and keep hands off?

This much can be said in regard to this question,—biology and psychology tell us that what one can do at any given time

depends more or less upon what he has been doing; *i. e.*, the life of one stage is determined by the life preceding this stage. From about two up to seven or eight the child is acting and reacting. He is giving himself his first kinks and turns. He is laying out the lines for his future automatisms and driving the stakes. His style of sitting, walking, speaking, throwing, etc., his style of reaction to authority, his style of social reaction, are all becoming defined and taking set during these plastic years. The lines are being laid for the child or against it whether it will or not. Enough care and systematic training, and no more, should be given during this stage as will assure the best approach in all of these lines to the years that are to follow. (The essentials for such guidance are *sensible* sympathy and a rare fund of insight and self control).

Where we do not know, the watchword should be "hands off." But the most common-place teacher or parent does know that if a child sits "humped up" the first years of its life the chances are that it will never sit erect; if it is allowed to fly into a fury and scream and tear its hair during these years, the tendency later on will be to do something worse; if it does everything in a slouchy, careless, half-finished way, with great difficulty will it ever learn to do them in any other way. If it is allowed to lie and steal with impunity, it will develop into a thorough-going liar and thief. Concerning these and similar things the child should not be allowed to develop at random. Who knows more, can do more; who knows less, should most assuredly do less. In a word, then, our motto for this stage should not be "hands off" but rather this: a better knowledge of child life, and greater sympathy with it, so that we may be able to know how and when to lay hands on.

Let us notice a second question—If the child is to receive more or less systematic training at this time, what should it be?

It has already been observed that during this stage the child's keen sensory side catches up every suggestion, so that on the one hand this is the stage of suggestion and imitation. This is one of the keys to the solution of the problem. Another key is to be found, I think, in the fact that this is pre-eminently the play stage. We have here a hint at both matter and method. (1) The greater part of the child's activity and, indeed, all of it at the beginning of this stage, should be play and not work. (2) Work should be only introduced gradually in proportion as the child develops in mental and physical control. (3) The child should not be held for a perfect piece of objective work.

In regard to method, but two things can be said with any degree of definiteness. (1) Suggestion should play an important role. (2) The spontaneity of the child should have full freedom.

This gives us a basis for the discussion of these two practical questions: *a*. What things may be taught the child at this time? *b*. How should they be taught?

It would require many volumes to discuss the merits and demerits of the entire catalogue of subjects, so the purpose here will be merely to touch upon enough things to bring out the thought and illustrate the principle.

Let us make the application to the child's play, work, and conduct.

Play. If play is to serve its highest end, it must be play in the highest sense spontaneous for most part, free from outer direction and careless of ends. Play under close supervision is a self-contradiction—it not only defeats the ends of play but ceases to be play. Parents and teachers need to remember that to require children to play according to prescribed formulæ means to have them quit play and go to work, and at the same time robs them of all the benefit of the initiative; and that thereby the main avenue of approach to the child's life is closed. It is a matter of common observation that to know a child, or any one else for that matter, he must be free to live his own life. This free living of the child is his play. It is commendable in parents to join in the plays with their children, but if they do so they must do so for most part at the suggestion of the child, and play the part the child would have them play in a way he would have them play it. Kindergartners and teachers in elementary schools would do well to observe the same thing. To call work play, does n't make it play, and any performance planned and closely supervised by the teacher, however attractive it may be in itself, realizes less in play results than in work results. This suggests the amount of freedom and spontaneity that should characterize the school plays of this early stage whether within or without the school room. If the kindergarten emphasizes play as an element in its curriculum, it must not be tardy in recognizing what are the essential elements of play. Furthermore, Sheldon (32) and Gulick (16) have shown that during these years children do not take kindly to organized play or so-called team work, and when inveigled into it are very unsuccessful. It must not be forgotten that during these years, the accessory muscles are not under good control, that movements are uncoordinated, that the child is not effective as a producer, and that activity finds its own immediate value in itself. Co-operation is essentially a work factor and not a play factor; and, this being pre-eminently the play stage, the child is not successful in co-operative games. Ample opportunity for *unorganized, unhampered, spontaneous activity* on the part of every child should be the play ideal of every kindergarten and elementary school.

Work. In considering the work appropriate to this stage, some things need to be restated as a basis for discussion. First, that the end of work is a definite product—physical or mental. Second, that this is the stage of imitation and suggestion *par excellence.* Third, that the accessory muscles are not under good control. Fourth, that the child's mental life is made up chiefly of percepts, reproduced images, and crude products of the imagination.

Taking them up in the order named, the child should be required to do only those things for which it has a fair degree of efficiency, otherwise, the end for which work is intended is defeated and through the force of habit a positive injury may come to the child. But those things for which he does have a fair degree of capability, he should be required to do. For, if it be true that at this time all work and no play makes Jack a dull boy, it is also true that all play and no work makes Jack a mere toy. The principle is equally applicable in the fields of mental and physical work.

In making pedagogical deductions from the second point, viz., this is pre-eminently the stage of suggestion and imitation, it need only be said in passing that both common observation and psychological reasearch have shown that this is true. (1: 2: 15: 18: 34.)

What the child gets through suggestion at this stage amounts to infinitely more in every way than what he gets in the form of precepts. To illustrate, — Neither formal grammar nor even language lessons are necessary to insure good usage on the part of the child that has lived among people who speak correctly; and no amount of both will insure correct usage on the part of the child that is not so situated. A year's change of residence served to alter in every way the pronunciation of two children aged three and six whose parents were entirely unaffected. Such cases could be multiplied indefinitely. In fact, suggestion and imitation are the basis for the development of language both in the race and the individual, and should be the chief and, aside from incidental correction, the only means of helping the child in his language at this time. Let the child hear correct usage and as soon as he is able to read let him have access to a variety of well written story books, and he will be helped infinitely more than by any amount of formal instruction. The latter method of helping the child not only fails in its purpose but even does positive harm inasmuch as it prematurely brings him to a consciousness of his own mistakes and of errors of which he would otherwise happily remain entirely ignorant. The language ideal at this time is saturation in good forms. Let the eye and especially the ear feast upon good language but never make the

child acutely conscious of the fact that this is good and something else is bad. An acute consciousness of good usage is only second in harmfulness to an acute consciousness of bad usage. This is the ripe age to give the child a start in the foreign languages providing he is so situated that he may apply both eye and ear to the work. If those with whom he associates use the foreign language, and if the literature at his disposal is written in this language, almost as easily will he at this time learn this language as he did his mother tongue. But, if he hears the mother tongue only or mostly, and the foreign language in the class-room only, it would perhaps be better to defer the work till a later stage. (See p. 389.)

In the second and third points we have ground for determining the nature of the manual work suitable for this stage.

Since President Hall's first lectures upon the subject some years ago, and the publication of Burk's work ('96) on the development of the nervous system from fundamental to accessory, many kindergartners have very wisely discarded work which requires fine movement and delicate adjustment such as fine needle work, work upon delicately perforated cardboards, laying of small sticks, etc., and have harmonized their requirements in writing more with the facts of modern physiology and psychology, by making greater use of the board and allowing children to do this work on a larger and freer scale in every way. The effect upon drawing has been equally wholesome and this, together with the facts brought out by Lukens and Barnes, gives a pretty safe basis for determining the work in this subject at this stage. The researches of Ross (31, p. 83), Bryan (5) and Burk (8) indicate that from the standpoint of physiology and psychology, the work in drawing at this time should be just what Lukens (24) and Barnes (3) have found it to be when the child is unhampered and left perfectly free to express himself. The former have shown that there is but little peripheral control at this time but with proper practice control may be developed rapidly toward the close of this stage at seven or eight years of age, while the latter have shown that the earliest drawings of the child are apt to be mere scribbles. The former have shown that the child is incapable of fine movements and delicate adjustments, but can easily make larger movements, and the latter have shown that after the scribble stage the child naturally draws with a few large telling lines making the drawing quite simple. Lukens agrees with Barnes in his thought that this is the time for the alphabets of drawing but that the technique or grammar of the subject should be deferred till a later time, say about the ninth year, and Mr. Henry T. Bailey, in the Massachusetts Report of the Board of Education, ('94-'95) says that "if the power to draw is not acquired

before the end of the ninth year, it is not acquired in the public schools." (29.)

Inasmuch as the purpose of this paper is to set out in relief the stages in child development with some of the more obvious pedagogical deductions only, the subject of drawing as such cannot be discussed fully — merely some of the primal facts that will serve as guides in working out the details. As the ideal at this stage on the side of physiology and psychology should be not so much a definite product but rather a bridging over from the unorganized, uncontrolled movements at the beginning of this stage to a higer degree of mental and physical co-ordination and control at its close, so at this time the ideal in drawing should be not so much one who can draw, but rather a movement away from scribble to plain definite lines whose combinations have more or less meaning. (Great care should be taken to avoid arrest of development either from crowding, retardation, or reversion.) Inasmuch as suggestion plays so important a role at this time, "interest in drawing should be early developed by giving children access to an abundance of good pictures, illustrated books, magazines and plates of great men, great scenes; and great sculptures, paintings and edifices. These helps are of the utmost importance in all art education, and should be in the environment of the child from the beginning. Drawing thus becomes a pleasure to children, and they acquire considerable skill without any instruction." (24.)

The general principles in a rational course in Drawing would serve equally well in other lines of manual work. Local conditions will be a determining factor in the technique of all of this work, but not in the principles underlying it. And, in all of the manual work up to seven or eight years of age, the spontaneity of the child should be allowed to assert itself. In many cases other forms than drawing will be taken up. Instead of drawing many children take to paper cutting first, and follow this with drawing. I have seen the pictures of animals, cut by a boy seven years of age, so true to life that even the mental mood of the animal could easily be detected. Although the pictures in themselves were plain, the conception and execution were that of a potential artist. This work for him was, above all things else a mode of expression, just as speaking, writing or drawing are for other children. It was followed by coloring and writing with unusually rapid progress in both. It is difficult to guess what the results would have been if this child at the age of four or five had been required to conform to a cut-and-dry course of manual work. But we can not take what this child did so well as evidence that all children of his age should do a certain amount of paper cutting. The valuable pedagogical suggestion that it contains is that children should be supplied

in the home and in the school with a variety of materials and have an opportunity to express themselves with perfect freedom.

If the development of the race and child have any pedagogical significance, this is evidently the ripe time for the beginning of the study of nature. We are not, neither shall we be, free from the need of and interest in the three fundamental human needs, viz., food, clothing, and shelter. The poet and philosopher can not prosper on rhyme and speculation alone. They, as well as the scientist and laborer, must have life before they have their own peculiar lives; they, too, must be fed, clothed and sheltered. We have here a center in which the interests of all humanity converge. The poorest and most ignorant have little more, and the most favored have nothing that can be substituted for them. The need for biologic knowledge was the first and continues to be the primary need of life. To know in some way which things are for us and which against us, which will cure and which will kill, in short to know the life with which and in which we live is our primary need. This is not only true chronologically, but logically and biologically as well. There is no escape from it. If there is any truth in the "recapitulation theory," and if the natural, spontaneous interest of the child is to be a determining factor in the selection of material for the kindergarten and elementary school, it would seem to be a gross error to omit those things which have been the earliest and most persistent elements in the development of the race and in which the child finds its greatest delight.

It would be outside the scope of this paper to discuss the standpoints, sources, and methods in Nature Study, suffice it to say that the most prevailing standpoints are what are known as the (1) Mytho-poetic, (2) Human value relation, (3) Ethical value, (4) Æsthetic value, (5) Intellectual value. None of these is all-comprehensive and, indeed, it may be that all of them are not, but each will serve as an organizing idea for the work. A pedagogical question which arises is, which should come first, second, etc.? The interest of the child must determine this very largely. Perhaps, for young children, better and more varied results could be gotten from the Mytho-poetic standpoint. Perhaps, for the adolescent, the standpoint of Ethical values could be used most effectively. We see here how intricately related are all the problems and phases of pedagogy. To plan a course in Nature Study one not only needs to know nature as it is to-day, but also the cultural stages through which the race has passed and above all he needs to be a student of children. Whoever tries to solve this or any other pedagogical problem from the standpoint of some little phase of work in which he may have particular interest is more apt to go wrong

than right. The great text book of nature is open before us. In this, both the race and the child find their most primary and fundamental needs supplied, and their first and most abiding interest awakened. In the kindergarten and elementary school, when practicable, the care and culture of animals and plants should be the first aim ; where this is not practicable, association and acquaintance with them should be encouraged. This study should constitute the very core and heart of elementary education and should be secondary to no other phase of work.

This is also the time to use Myth and Narrative History. For the child the world is shrouded in mystery and peopled with strange and unheard of beings. The mysterious appeals strongly to all, but especially to the child whose experience is limited and to whom the world is largely a mystery. Although his curiosity for meaning is intense, the world cannot be interpreted to him scientifically or philosophically. Myth offers a splendid opportunity for introducing him to many of the forces and passions, hopes and fears, victories and defeats that have made his world what it is. It should be taught as the counterpart of Nature study, the one introducing the child to life as it is found in plants and animals and the other introducing him to human life and spirit. Following close upon Myth or carried along with it, should come Narrative History—not the history grind but the historical story. Children have great delight in change, in movement, in events. This is especially true where the agents are human or where they are conceived as possessing or being ruled by spirit akin to human spirit. The child is not interested in the intricately complex principles and processes of modern society, but its interest in the simple and more tangible beginnings is absorbing. Any phase of history that can be subjected to the form of the simple narrative story is most excellent pabulum for the child at this time.

There remain to be discussed the subjects of Reading, Writing, and Arithmetic (the three R's) for children before their seventh or eighth year. To make more firm the ground on which deductions in regard to these subjects are to be based, let us notice some additional things that are true of the child and his development during this stage. In his address on Movement and Psychic Processes, Mosso (26) says : "In man the brain develops later than in all other animals, because his muscles also develop later. The striped muscles are more incomplete at birth in man than in any other animal. For this fact that the human brain develops so slowly, I am able to discover no other reason than this, that at birth the organs which effect movement over which the brain exercises its

authority, are not yet complete. Modern views show a tendency to confirm what the great philosophers of Greece already recognized, viz., that children ought to begin to read and write only with the tenth year; that it is injurious for the development of the brain to be fettered to the school-desk when only five or six years old. Attention produces not only the same chemical effects and the same fatigue as muscular exertion does, but we feel also, when we are attentive to any thing, the characteristic muscular strain on the occiput, the forehead, and other parts of the body. The more mobile the extremities of an animal are, the more intelligent it is.

"The mutual relation of intelligence and movement is one of the most constant factors in nature, the movements always change where intelligence changes. Microcephalic individuals have an awkward gait, and an inconsiderable dexterity in the movement of the hands. This change is still more striking in the case of idiots. When the brain has been fatigued by exclusively intellectual activity, the sensitiveness of the hand and direct irritability of the muscles are also decreased. The influence of the hand upon the development of a language is evident from the fact that an aphasic patient is made to write in order that he may gradually regain the power of speech. The relation between muscular movements and conscious processes is so intimate that when the arms and hands of a hypnotized person are brought into certain positions, and certain muscles by external contact made to contract, certain emotions are induced corresponding to those muscular contractions."

But, as has already been noted, Ross, Bryan and Burk have shown that before seven or eight years of age, the child is to a high degree inaffective as a motor being. The work of Lukens and Barnes on Drawing as well as common observation by every one, re-enforces the thought. If there is then this close parallelism between movement on the one hand and psychic processes on the other, as is claimed by Mosso, it must follow that inasmuch as movements are spontaneous, unco-ordinated, and but slightly under the voluntary control of the child, so will its thoughts likewise be spontaneous, flitting and illogical; and this is exactly what we find in every-day observation. Dr. Vulpius has studied the fibers which horizontally traverse the surface of the hemispheres, which he calls the tangential fibers. These appear on the outer layer of the cortex in the fifth month of life; in the seventh month the tangential fibers can be found in the deep layers; while in the layer between, the cross fibers only appear after a year. In the child of eight, and even perhaps of seven years, the fibers of the cortex and medullary substances are complete in number and caliber, and have taken the same arrangement as in the

adult. It is during the development of the brain and nervous system before birth and during these first years of growth, that malnutrition and perverted action occur, which result in defective mental power." The point in this that needs to be emphasized here is the close relation between nervous nutrition and mental power. Neurologists and students of children's diseases all agree that up to seven or eight years of age is the period that brings out the effects of bad heredity due to the rapid rate of growth and instability of the organism. If, as Hurd says, in the process of education, energy designed to further the growth of the brain is dissipated in functional activity, hereditary tendencies to disease become thereby developed, or the development of the brain is limited and defects become evident which under more favorable circumstances would not have existed.

To summarize the foregoing, we have (1) a close relation between movement and intelligence. (2) The child's movements are unco-ordinated and spontaneous. (3) Therefore, the child's mental life at this time is apt to be spontaneous, flitting, and illogical. (4) The brain is developing primarily in growth and not in function. (5) We should, therefore, expect a very simple kind of mental life. (6) The necessity for brain nutrition and not brain functioning to bridge over the period when hereditary tendencies to disease are most apt to be developed. If these things are true a question for pedagogy to answer is, are reading, arithmetic and writing as daily assigned tasks, conducive to the best development and highest welfare of the child? Is the amount of information and so-called discipline derived from their study by children under eight years of age worth the cost? A comparison of the outlay with the income, compels the conclusion that they are not worth the cost. My reason for so answering is that work in these subjects flies directly into the face of the foregoing facts of child life and development during this stage. First let us notice reading in the light of the summarized statement of facts.

Perhaps no one who reads this will remember his own peculiar psychology when he learned to read his mother tongue, but most will remember how it was in learning a foreign language. Students of the French and German language find at first if they are very careful about their pronunciation they are apt to go over a page without extracting the thought, on the other hand they find that if they are anxious about the thought, their pronunciation is bad. Young men and women find it very difficult to get both faultless form and meaning until they have spent many years upon the language. And, yet, we require of the child with his simple undeveloped unco-ordinated, physical and mental life to perform an even more difficult task.

Is there any one who does not remember what a fearfully difficult thing it was even to keep the place? But this is only one element in the child's difficulty; he must hold his book up, hold it open, keep the place, and by close attention and delicate adjustment of the eyes, he must decipher the characters in themselves and keep them related to each other and then we expect him to get the meaning and read with the spirit and understanding. The performance of such a task is not only injurious but in most cases impossible, and its requirement positively cruel. Such work should not be a fixed daily task of the child until there is a fair degree of muscular co-ordination and control, and mental strength commensurate to such physical development, and until the period for the cropping out of weak hereditary tendencies due to instability of organization and rapid growth is passed over, which would be at about the age of nine or ten. For essentially the same reasons work in arithmetic and penmanship should be taken up, if at all, only incidentally during this early stage.

Aside from the purely concrete number work, Arithmetic is sufficiently abstract and general to demand at least a fair degree of brain functioning and the ability to direct attention and to carry on in a simple way at least the processes of abstraction, association, and generalization. There is nothing in the physiology or psychology of development that indicates that the average child of seven or eight is capable of these things. By constant appeals to the child, together with scolding and threatening, a few arithmetical facts may be literally hammered into its head, but no one would ever guess that he could do anything worth while with these facts outside of the school room; on the contrary, every one who has given the matter even passing attention knows that he cannot. If the child should give all the time and energy that are worse than wasted on Arithmetic, to sensible work in Nature Study, Myth, and Narrative History, for which he has both an interest and ability, the world would be revealed to him in innumerable ways, learning would not be a drudgery and a bore, time would be found for the introduction of many kinds of work that have a real significance and value for him, and even more effective arithmetical knowledge and ability would be gained incidentally in connection with the subjects of vital interest and importance than are gained by the humdrum, formal study of the dry-as-dust arithmetic.

Reading and arithmetic should not be taught as formal subjects until the close of the transitional period which closes out the stage of childhood at about the age of nine or ten. The old conservatism which keeps us doing things simply because we have been doing them must be broken away from whenever there is ground for so doing, and especially when it is plain that

there is a better thing to do. When reading and arithmetic constituted almost the entire curriculum, child life and its development were not the criterion. Social rather than physiological and psychological facts were the determining factors. Professor Dewey (13) has well said that "The primary school grew practically out of the popular movement of the sixteenth century when along with the invention of printing and the growth of commerce it became a business necessity to know how to read, write and figure. The aim was distinctly a practical one; it was utility; getting command of these tools, the symbols of learning, not for the sake of learning, but because it gave access to careers in life otherwise closed." Neither should the social aspect of education to-day be ignored in the planning of school work, but it should not be emphasized to the hurt of the child. As was stated in the introduction, any attempt at curriculum making or educational procedure which does not take into account the laws and stages of development of the one to be taught, is apt to go wide of the mark and result in positive injury.

Conduct. In deducing some of the more general principles which underlie the conduct and moral training of the child up to seven years of age, we must here, as in its play and work, make our determinations from the standpoint of the child itself and not from the standpoint of the adult. Two points must be borne in mind. (1) Many things which would be grossly immoral for the adult have no moral significance whatever for the child. (2) The child's standard of morality, so far as he can be said to have a standard, does not come to him so much by intuition as by precept, and not so much by precept as by unconscious suggestion and imitation. The first point will be helpful in determining the content of morality for the child, and the second will serve as a guide in determining the method in moral training. Nothing could be more deadening to the development of the child than an attempt to make it conform in every way to the moral standard of the adult. Because the child appropriates at this age that which does not belong to it, it is not therefore a thief as its father would be under the same conditions. Because the child in the vividness of its imagination does not adhere strictly to the literal truth it is not therefore a liar. Because the child connives in every conceivable way to attain a desirable end, it is not therefore a trickster; and because the naked child, even at seven or eight, manifests no sense of shame, it is not therefore disgracefully immoral. From the standpoint of the adult these things would all be gross breaches of morality, while from the standpoint of the child they have but little or no moral significance. On the other hand there will come a time in the life of the child when these very things will have great moral significance, and the

pedagogical question which must be met is, what can be done for the child at this time which will result in a sense of right and wrong and a disposition to do the one and avoid the other, but which will not result in prudishness or a precocious and morbid sense of moral delinquency? Prudishness and moral morbidness, above all things else, must be avoided during these years. Better no sense of morality at all, than that the child of six or seven should either hold himself up as a bright and shining example of right conduct, or that he should magnify his childish mistakes into cardinal and unpardonable sins. Such moral attitudes are by far more hopeless, even, than almost any overt childish misdemeanor. It is not good for the child to be acutely conscious either of his goodness or his badness. His mind for most part should be, and under normal conditions will be, occupied with something other than self. It is in this connection that direct, positive, moral training at this time not only fails to accomplish desirable ends, but does positive harm; the child and his behavior are apt to be made the topic of discussion. For this reason, in all attempts to teach morals, an indirect method—the reading of a story, the relating of an incident, etc.,—is superior in every way to the more direct treatment, which should be held in reserve for special cases. We often teach the child to discern the right from the wrong, and admonish him to cleave to the one and forsake the other, only to find that as a result of our teaching, or in spite of it, the second state of that child is worse than the first. As a rule, the discriminations that he is capable of making are not effective in determining the course that he will pursue. Fine discriminations and admonitions are apt to be valuable in proportion to their scarcity. Nowhere in the development of the child do suggestion and imitation play so lasting and important a role as in the development of morals and conduct. As nothing helps the child so much in the acquisition and use of good language forms as saturation in good language forms, oral and written, so nothing will instill within him the habit of using pure rather than vulgar language so much as association with those who always use pure language. No amount of moralizing on the sinfulness of lying will help the child so much as living with people who always speak the truth; and nothing will more readily and effectively develop in the child a sense of personal and property rights than association with those who are careful to observe the rights of their fellows, and who do not appropriate to their own use that which does not belong to them. The first great concern of parents and teachers, who are interested in the morals of their children, should be their own behavior.

The moral ideal for the stage of childhood is innocence of right and wrong, morally considered. Every child knows that

there are some things that may be done and some that may not. This knowledge should come to him more as a matter of course. He soon learns to keep his hands out of the fire because he does n't like the result of putting them into it; and so he must early learn to desist from many things for the same simple reason that he does n't like the consequence; but he does not, neither can he look upon these things in themselves as right or wrong. I have known children to repeat the oaths of their elders with as little sense of guilt as if they were repeating the catechism, and in so doing they were not therefore immoral. The danger, however, is that having the language at their command, it will be but a short step to supply the content, which means profanity. Something should be done to prevent such results. Prohibition of the use of such language, with little or no emphasis upon the naughtiness of it, is the most rational and effective remedy. And so it is with the child's conduct in general. The experience of the parent and teacher must count for something, else what is the significance of parenthood or control in school? There will come a time when the child should be thrown upon his own responsibility—left more or less free to do as he desires, without let or hindrance, but not so now. Indeed, at the beginning of life, so far are we removed from the possibilities of such an ideal that implicit obedience should be insisted upon. Some one has wisely said: "If the child does not obey when first commanded he should be punished; but if the teacher even succeeds in securing obedience after he has commanded many times, he, and not the child, should be punished."

Teachers must know how demoralizing it is to keep nagging at children. They must also know that for many reasons there are some requests whose reasonableness cannot be explained to the child. In such cases implicit unquestioned obedience should be expected. The child with a healthy mind does not contemplate the wickedness of one possible line of action and the goodness of another possible line, and upon the basis of this discrimination determine his act. If he be a normal child, he does desist from doing certain things, because he has learned that these are things that must not be done, and he falls into the habit of letting them alone. On the other hand, if he be a normal child, he does certain things over and over again, until his habit of action begins to take form; and, so, the child should pass from his childhood into the early years of youth with the alphabets of moral habits pretty firmly fixed, but in no sense a contemplater of deeds.

Summary.

To summarize the stage of childhood briefly:

(1) There is here, as elsewhere, a close relation between physical movement and mental efficiency.

(2) The child's physical movements are spontaneous, uncoordinated, and but slightly under voluntary control.

(3) Its mental movements are likewise spontaneous, flitting and illogical.

(4) The end of work is a definite product—physical or mental.

(5) This is the time of rapid nervous growth and great nervous instability.

(6) The brain approximates its full weight at seven or eight, at which time development turns more to function than to size.

(7) The child's mental life consists chiefly of percepts, reproduced images, and crude products of the imagination.

(8) This is the time when suggestion and imitation play their most important role.

(9) In general, for the child of this age, right is what he may do; wrong is what he may not do. He has but little notion of right and wrong in themselves.

Based upon the foregoing and their corollaries, the following deductions are made:

(1) The chief business of the child up to seven or eight should be growth; hence, nutrition in its widest sense is its greatest need. (2, 3, 5, above.)

(2) The child is incapable of producing effectively, and is apt to be permanently injured by trying to do so (2, 3, 5, above), hence, he finds his chief occupation in play rather than in work.

(3) The child should be required to do only those things for which he has a fair degree of efficiency (2, 4, 5, above), and for most part those things which appeal to him.

(4) The child is helped more through suggestion and imitation than by formal instruction. (7, 8, above.)

(5) Through suggestion and imitation his social and natural environment have great influence upon him. (8, above.)

(6) The aim of training at this time should be the production of the healthiest child possible, and not information. (1, 2, 3, 5, 6 above.)

(7) Some things besides play which appeal to the child at this time and which give him mental vigor, and at the same time do not interfere with his development, are Nature Study, Myth, Narrative History, Paper-cutting, Free-hand Drawing, and Singing.

(8) Arithmetic and reading require muscular and mental ability and control that the child has not yet attained, and should not be a part of the regular school work. (2, 3, 5, 6, 7, above.)

(9) Nothing has so great moral effect upon the child as the things he sees and hears. (8, above.)

(10) Unquestioned obedience to rational, intelligent authority

should be the principle in the management of young children, and freedom from this principle will increase with the development of the child.

In the negative discussion of reading and arithmetic for the stage of childhood, I have already anticipated some things which from the positive standpoint belong to the following stage. But before passing to this stage the transitional period which comes between these stages must be treated.

IV.

Transition from Childhood to Youth.

As has already been shown, the stages of infancy and childhood are ushered in by short transitional periods, which are both retrospective and prophetic. So, in passing from the stage of childhood to that of youth, at about the age of eight, there is a marked transition which carries into it and ofttimes through it, many of the characteristics of the preceding stage, and at the same time develops new features which are peculiar to the stage that follows. As in the other transitional periods, so here there can be drawn no hard and fast lines, but in general the time is between seven or eight years of age at the beginning and nine or ten at the close. Old things are passing away and new ones appearing.

At about seven or eight years of age the brain has approximated its full weight, and is changing in its development from increase in size to increase of function. Along with this there is also a change in the rate of bodily growth; so that the annual increase will be greater at the beginning of this stage than it has been through the stage of childhood.

The child is losing its first teeth and the permanent ones are coming. This more objective and superficial change seen in the case of the teeth has many physical and mental counterparts; the child is not quite at its best either physically or mentally.

Doubtless many of the disturbances of this time are due to bad nutrition which finds its cause in improper mastication of the food, the child having sometimes as many as three or four teeth out at a time.

This same thing is seen in many of the domestic animals, notably the horse which gets his second teeth at the age of four. Dealers in horses for the market will not buy under five years of age. Their stock remark is that a horse at four is no account. While this is not literally true, any one who has handled young horses knows that a four-year-old does not have either the endurance or trustworthiness of a three-year-old. Reggner (4) observed that young monkeys often sickened and died of fever when shedding their milk teeth, and the same process is cer-

tainly not free from risk in the human subject. Nervous children often become emaciated during its progress, or suffer much from neuralgia or cough; and from having been hardy and robust, they become pale and delicate. Apparently in connection with it also complaints are sometimes made of headache, tenderness of the eyes, and lassitude.

At this period is encountered also that curious and sometimes puzzling perversion of the moral nature, known as malingering. From egotism and insatiable craving for notice and sympathy, from a desire to escape work, from jealousy, or from some more complex motive, the boy or girl simulates disease, and may do so with considerable ingenuity and success, or exaggerates some trifling ailment.

The disorder is generally poverty of the blood and nervousness, which not rarely are connected with constitutional changes associated with the second dentition.

There is a change in the vascular system at this time. Krohn has found that the child of eight fatigues much more easily than the one of six or seven or the one nine years of age. There is apt to be dilation of the heart and cardiac incompetence, such as shortness of breath and readiness of fatigue. The reason for the dilated heart at this time is the sudden increase in weight of the child without corresponding increase in size of heart muscle. The dilation or tendency to dilation and fatigue curves, represent the fact that the child must conserve its strength until its heart grows to its work. (9, p. 114.)

Dr. Christopher (10, pp. 330–331) says,—"We must recognize that the period from seven to nine years of age, quite irrespective of the other conditions of the life of the child, is one in which fatigue occurs very readily and is one in which damage to the heart is likely to be produced. This period in child life is one to which special attention should be called because of the extremely insidious character of its approach. It is not only in physical fatigue that it manifests itself, but in mental fatigue and in the exhibition of many nervous symptoms otherwise utterly unaccountable.

One of the commonest manifestations is the appearance of general laziness on the part of the child, and it is extremely common to conclude that the child needs more exercise. As a matter of course it is perfectly evident that, of all things, the child does not need more exercise at this period, but in every way its force should be conserved and its labors reduced to the smallest possible degree consistent with the maintenance of health. The duration of this period lasts occasionally a few months, although in a number of instances I have known it to last two years and even longer, during which time the child's failure to develop sufficient progress at school, and its manifest-

ations of unpleasant nervous symptoms have been the cause of great anxiety on the part of parents. It is clear that the school work during this period of life should be diminished to a point below that which has been done the previous year and which may be undertaken safely the next year."

The studies of Jastrow (21) indicate that at this time there is a transition, change or stage in the development of the special senses notably the sense of sight. The results of his investigations and observations show that children who have lost their sight before about seven years of age (the time coincides to the time for the approximate weight of the brain) do not have visual images, and, as a rule, those who lose their sight after this time do have. This, perhaps, does not point so much to a change in the development of the organ as it does to a central change. However this may be, it is significant as marking a time of transition in the course of development, and is fraught with great pedagogical value not only for those who teach all classes of blind, but also for those who teach normally developed people.

One of the most striking changes that occur at this time is to be seen in the entirely different nature of the somatic diseases preceding and following this period. As has been shown, during the stage of infancy from two to seven, is the time for infectious diseases, and in his treatise on The Diseases of Infancy and Childhood, Holt shows that after this time there is a transition from the infectious diseases of childhood to the diseases which are more often found in adults than in children. The change in nervous diseases at seven or eight indicates even more clearly than does the change in somatic diseases that this is a time of transition. Before this time which Clouston (11) designates as the period of most rapid brain growth, special sense education, motor co-ordinations, and speech, the prevailing nervous diseases are convulsions, squint, stammering, backwardness of speech, night terrors, infantile paralysis, tubercular meningitis, hydrocephalus and rickets. "Every one of these," he says, "can be connected with the immense brain growth of the period, with the development of certain essential brain functions at this time, such as speech equilibration, and the other essential muscular co-ordinations, with the intense trophic activity, and with the rapid metabolism of every tissue, with education of function of special sense organs and their brain centers."

The character of the nervous diseases which follow this short transitional period in most cases differs very greatly from that of the diseases preceding it. We have now, says Clouston (11), the period when muscular motion becomes co-ordinated fully with emotion, as seen specially in facial expression; and the nervous diseases which characterize the years from eight or nine

to thirteen or fourteen are chorea, some cases of epilepsy and somnambulism, megrim, asthma, and some eye defects.

In this transitional period, at about eight years of age, there are as many striking indications of physical disturbance and readjustment as are found in the pubescent period with which all are acquainted, and about which so much has been written and spoken. I think there can be no doubt that if the period at eight carried with it any objective sign of the birth of a function so deep-seated and universal as is the sex function, it would not have been so long in receiving the attention due it. For in other ways the changes which occur at about eight are even more striking than those that occur at about thirteen.

As was said in the introduction of this topic, the life at this time is both retrospective and prophetic. We have both the traces of the stage preceding it and suggestions of the stage following. Part of the child's teeth are temporary and part of them are permanent; the child's brain, although it has approximated its growth in size, and is turning toward development of function, nevertheless continues to grow at a slow rate, and functions often inaccurately and with difficulty. The vascular system is as it was, while the muscular system has taken a sudden leap ahead, and the disproportion in the development of these two systems at this time results in cardiac incompetence and fatigue.

The somatic and nervous diseases are about evenly divided between those characteristic of the stage preceding and the one following.

There seems to be no abrupt change in the development of the senses at this time, and yet the period is significant, inasmuch as those who lose their sense of sight before this time are apt not to have visual images and those who lose their sense of hearing before this time are not apt to have auditory images.

This then is a time of readjustment in the vascular, muscular and nervous systems, and of great disturbance in the functions of circulation, digestion and nutrition. Coming at about the age of eight, when the child is apt to be in his third or fourth year of school, these facts are fraught with great pedagogical significance. It seems evident that the child is not capable of the same amount of physical and mental activity and endurance as he was at six or seven or as he will be at nine or ten, and this fact in itself would demand on the one hand a decrease in the amount of work required and on the other hand the provision of ample opportunities for pleasant recreation and amusement and quiet rest.

Dr. Jackson (4) says, referring to the disorders incidental to the second dentition, "The remedies which I have found most useful are as follows:—First, a relief from study or from regular tasks, yet using books so far as they afford agreeable occupation

and amusement. Second, exercise in the open air, preferring the mode most agreeable to the patient and in more grave cases the removal from the town to the country."

V.

Youth.

Although no two records on the growth of children coincide throughout, there seems to be in a general way agreement that at about eight or nine years of age there is a sudden increase followed by a slight decrease in annual increment until the time just preceding puberty. So far as is known there is nothing peculiar in the development of the nervous system at this time. There seems to be a steady development of its functioning power and a very slight increase in the weight of the brain. These years of slow growth from about nine to twelve or thirteen years mark a third definite stage in the development of the child. Both the physical and psychical life are unique and demand a unique pedagogy. The child is not simply his former self grown larger but he is in many ways an altogether different being. The transitional period from seven to nine has served to transform him not only nominally but actually from the stage of childhood to that of youth.

The chances for life are better now than they have been heretofore, the girls being least susceptible to disease at 11 (3.23 per 1000) and the boys at 12. (3.42 per 1000.) (17.) The somatic diseases to which the child is liable, while not peculiar to this stage, are almost entirely different from those of the stage preceding this; while the nervous diseases to which he is most liable are to a high degree peculiar to this stage. The heart muscle has increased in size proportionately to the size of the body and so fatigue is less easily induced than at the age of eight. "Sensation, special and common, and its organs have been developed; muscular co-ordination has progressed far; and many of the mental faculties, such as memory, fancy and emotion, have all acquired some strength, but muscular action has not been fully co-ordinated with feeling, and this is the period of life when this co-ordination takes place." (11.) This is the period of endurance and of co-ordination mental and physical, and mental with physical; the time for the storing up of reserve power and the establishment of automatisms—the essential forerunners of the reproductive function. It is the intermediate stage of life between the stages of greatest brain growth and of highest functional advance; between the pure gathering in of egoism and the appearance of the higher altruism. Above all things else this is the "laying up," the "salting down" stage of child life. . . . As be-

fore, let us consider this stage from the three-fold standpoint of play, work and conduct.

Play. In regard to the child's play at this time the principles recognized in the earlier stage should not be lost sight of here. It should be unhampered, spontaneous and careless of ends. But there are other elements entering now that were not present before. This is the time when the transition is made from the purely individual games and plays to the full fledged co-operative games. Every nine-year-old boy has his nine and eleven or belongs to the teams of some other boy. From the immediate artistic standpoint all such co-operative play is a failure, but its mental and physical significance to those who participate can hardly be gainsaid. At first the captain of a team will hardly be able to hold his men together long enough for a single game; a bruised finger, a bad start, an imaginary slight sustained by a prominent member of a team, and a multitude of equally trifling matters play havoc with the captain's organizing genius.

These things are not so true of the twelve-year-old team. Three years have served to work a transformation. Now teams are organized that remain intact all season — and so almost every town has its "North Enders," "South Enders," "West Siders" and "East Siders." Whereas the nine-year-olds hardly knew the "outs from the "ins," the twelve-year-olds know the game as well as the most inveterate "rooter." Furthermore they have attained the muscular strength and co-ordination to execute it. Hand in hand with this development of muscular strength and control have gone mental strength and control. So that the team hangs together after a half dozen crushing defeats. They do not disband because the pitcher has an off day or because the center rush fumbles. They have learned that to have one's own way absolutely in play means to play alone, and that team work means self-control in the highest sense. Aside from health, which should be the chief consideration, the great gains to be derived from play at this time are to be seen in the increased mental and physical control developed in co-operative games and plays. Along with this control and subjection of one's whims and caprices for the sake of the group there must be found the same spontaneity and freedom as characterized the stage up to seven. The chief difference lay in this, that whereas in the earlier stage the plea was made for the absolute freedom and spontaneity of the individual, here we must insist upon the same degree of freedom and spontaneity on the part of the group. There the individual quit playing with its doll and began playing with its toes at will. Here the group quits playing ball and begins playing war at will. There the child exercised the initiative in every particu-

lar. Here the group exercises this prerogative. There must, in the latter as in the former case, be absolute freedom from external control. Better that a team should disband a dozen times a day than that it should be organized by the captain's father and sustained through paternal compulsion. On the other hand, one of the things that every child must learn sooner or later is that if he is to live in society there are some things he may do and many things he may not do. One of the hardest lessons that a boy has to learn who moves from the country into the city is that he cannot throw stones in every direction. It is not easy for him to reconcile himself to the proposition that all his throwing must be straight up. But that is the price one must pay for social life. There is no place where this lesson can be taught so naturally and brought home to the child so forcibly and in a way that it will be accepted so readily as in its own co-operative games and plays. Thus unconsciously to the child and entirely incidentally has come to him one of the most essential and fundamental lessons of social life.

Conduct. In the following discussion of work for this stage, and of conduct for the previous stage, most things that bear upon conduct at this time are given. All of the principles suggested for the earlier stage should be observed here. But it must not be forgotten that the child's notion of right and wrong has developed *pari passu* with his physical and mental development. He should, therefore, be held responsible for his conduct in a way that heretofore would have been unjust. Insight and rational sympathy on the part of the teacher and parent are of the greatest importance. Judicious but close discipline should be exercised. While the fundamentals for work as suggested below are being drilled into the child at this time, it is just as necessary that the fundamentals in conduct should not be slighted. No task should be set that is too difficult for the child to perform, and no performance should be accepted that is not well done. Irremediable injury will come to the child who is allowed to roughly approximate a standard in work and conduct. Fairness should always characterize any requirement in conduct, and the child should be expected to fulfill this requirement promptly, fully and unequivocally. These are the years for discipline in conduct as well as in work.

Work. The stage from nine to thirteen differs from the one up to seven in that the earlier was pre-eminently the play stage while the later should be pre-eminently a work stage. It was found that before seven the child is not apt to have developed mental and physical control sufficient to enable him to produce effectively and that he is apt to be injured by trying to do so. After the transitional period, at about eight, the average child is found to possess sufficient strength and control in both these

lines to produce effectively in various ways without endangering his health or development. It must never be lost sight of that an injudicious amount of work is to be avoided at all times.

This, then, is the time when the child should be initiated into hard work. It is a time, also, when his tissues, muscular and neural, are plastic and when he is largely exempt from disease. It is the time for drill, for practice, for discipline and even for drudgery. This is in no way contradictory to the doctrine of spontaneity advocated in the preceding period. The conditions of life that I have just enumerated show that the child does not now run the risk of arrested development that he has heretofore and there is one very important chapter of psychology that is too little considered in the discussions of the spontaneity and natural interest of the child. This is the dependence of interest upon attention. The emphasis is almost always placed upon the obverse proposition that children attend to whatever they have an interest in, but it is just as true that they are apt to become interested in whatever they attend to. Owing to the conditions of development, I should say for the stage up to seven, for most part let them attend to those things which attract them without assistance and for this stage let them attend to those things which serve as the alphabets of formal school work even though at times their interest in some lines must be induced by attention to them.

Many lines of work which the child was capable of pursuing only incidentally in the previous stage should now be taken up in earnest, while the things he has been doing he should in a degree continue to do.

Nature Study should not be supplanted by arithmetic, and the story will still have its place in the curriculum, but there will be readjustment of work so that the course will be strengthened by the addition of subjects. Reading should now be made one of the daily assigned tasks. The average child by this time possesses the mental and physical strength and control which will enable it to use the instruments of reading as a source of enjoyment and information without endangering its health and robbing it of time that could be much more profitably used in other ways. The child of nine or ten will not consume all its energy in holding the book open, keeping the place, and interpreting the thought. The end to be attained should be facility rather than ability to pronounce polysyllables. To this end there should be a well selected list of books treating of all subjects of human and especially of childish interest accessible to the child, and he should have perfect freedom in the selection of his reading material. A great amount of oral reading should be encouraged. Facility to catch the thought and to express it intelligently

must be sought. The aim should not be to develop critics but to master the subject as a tool; to become proficient in the use of it as a joiner is in the use of his chisel. It need hardly be said that the child's opportunity for such drill is not limited to his reading and story books, but that every book he uses, regardless of subject matter, serves equally as well. If the time given to reading before the child is seven years old were given to real things in which he has a lively interest, as was suggested in the discussion of work for that stage, it would bring such a fund of information and interest to its reading work at nine years of age that the problem of method in teaching reading would practically solve itself. It has been demonstrated over and over again that the way for an adult to get a working mastery of a language is to become absorbingly interested in the subject written in that language. And so it is with the child. If he can arrive at this stage with a first-hand knowledge of and interest in rivers and hills, flowers and trees, birds and bugs, animals and people of all sorts, reading will be a key whose use he will not be long in learning. Arithmetic should also cease to be only an incidental study and should become one of the regular studies of the programme. The child now possesses a fair degree of brain functioning power, and the ability to direct its attention and to carry on, in a simple way at least, the processes of abstraction, association and generalization. It also has physical development sufficient to use the materials of arithmetic to some purpose and without injury to itself. The aim at this time in arithmetic should be a mastery of the fundamentals; the establishment of the alphabets of arithmetic. For two reasons this should be done. There will never be a time when the child can do this kind of work better than he can now; and advance in the subject is absolutely hopeless without it. The child must learn to read and write numbers, whole numbers, fractions, decimals and denominate numbers. He must learn the addition and multiplication table until, shuffle it however you will, it will be as familiar to him as his own name. He must become thoroughly at home in the tables of denominate numbers. No effort should be made to put the child through the book or to make a mathematician of him. He should not be held so much for his method as for his work. He should not be held for the logic of his work but for the performance of it. He is not necessarily ignorant of his work because he cannot explain it. The aim in arithmetic at this stage should be *drill* upon the fundamentals until the child uses them with as much ease as he feeds himself. The foreign languages should be taken up at this time. Indeed, if the child is so fortunately situated as to hear these languages, or if skillful teachers can be secured, they may be taken up much earlier. (See p. 370.) But under no conditions should they be

allowed to be deferred to a later time than this. Observation and testimony both show that seldom is a person who begins the study of a foreign language at a later stage entirely free from the accent peculiar to his own language and in every way as proficient as a native born. This is the time when children manufacture language; when they speak the so-called "pig latin;" when they distort their words and sentences; when they communicate in abbreviations; when they use secret language; when they begin to talk by gestures and use the deaf and dumb alphabet. It is the ripe time for the grafting on of new modes of expression. Furthermore, the wisest and most successful teachers of foreign languages advocate its study at this time, and some of them even earlier. As in the use of the reading and arithmetic book, so here the child is able to use the materials necessary for such study. The thing to be aimed at is facility. The conversational method should be insisted upon. Whoever cannot teach by this method should be considered unfit for the modern languages as one who does not know the multiplication table without the book is unfit to teach arithmetic. Correct forms should be insisted upon from the start. This end will not be attained so much through a grind upon technical grammar as by reading and hearing good forms and exercise in the use of them.

The ideal for the foreign languages at this time will be much as the ideal for the mother tongue was in the earlier stage and indeed as it is for most part in this stage. *Saturation in good forms both oral and written with perfect freedom of expression.*

The work in Nature Study will serve as the most natural introduction to the more formal study of geography. The child's interest in his natural environment will be extended to an interest in nature in general. Through his knowledge of and interest in the plants and animals of his own region he can easily be led into a study of the fauna and flora of different countries, and this will in its turn serve as an excellent introduction to the study of biology a little later. In the same way an interest in the mineral world will bring him naturally to the study of geology. The child knows that many things that he consumes in the way of food and clothing are not produced at home and he also knows from his previous work in Nature Study that these things have their origin in plants and animals. Here is an additional incentive to study the plants and animals of different regions but it serves its highest end as an introduction to the study of the two great geographical topics of commerce and manufacture. No more dreary task was ever assigned a child than the one of committing to memory outright all the agricultural and manufactured products of the different States in Asia or the imports and exports of Australia. And

no more valuable or absorbingly interesting piece of work can be undertaken than the tracing out of the processes that resulted in the shoes or the hat that he wears or the salt and pepper that he eats. Instead of getting a few isolated facts which are dismissed after the recitation for others just as valueless, the child would thus get things in their relations and the phases of original production, transportation and manufacture would signify something to him. Without any attempt at philosophizing, a thing to be studiously avoided at this time, a question which always arises in the mind of the child is,—"Why don't they raise pepper and cotton in New England?" "Why is the meat that I eat carried from the Mississippi Valley?" "How is it that the people in the plains and their neighbors on the mountain side produce such widely different things?" "Why is Vancouver so much warmer than Labrador?" It need hardly be said that such questions show that the time is ripe for the study of climatic conditions—the significance of altitude, latitude, ocean currents, relief, contour, movements of the earth, the change of seasons, and all the geographical conditions which make the products of one region differ so widely from those of another. The study of the relief of a country, its climate, etc., paves the way to a study of the geographical basis for the history work. Children at this age can be led to see and have great interest in seeing why, for example, Illinois does not extend a little farther west, Indiana a little farther south and Massachusetts a little farther east; that ancient Greece was not divided into more than twenty States through mere resolutions, and why modern Switzerland is divided up into twenty-six cantons.

It must be admitted that these suggestions do not at all times run parallel to the logic of the subject, but it must also be admitted that they do run parallel to good pedagogy and we care more for pedagogy than we do for a smooth running piece of logical machinery. The chief reason that geography has been a bore to students and a burden to teachers and a grief to pedagogues is, that we have been trying to organize it and present it logically, beginning with mathemathical, in which the child can possibly have no interest, and going from this through physical to political. If the wits of the pedagogic and scientific world were summoned to devise a more unpromising and fruitless scheme for geography work than the one of following out the logic of the subject, their work would surely result in unequivocal failure.

In the same way the history stories and the myth of the earlier stage bring the child naturally to the more careful and detailed study of history. The work at this time should be full of human interest. The time has not yet come for the more

abstract study of treaties, constitutions and government documents. In the study of American history, the beginnings of our history appeal very strongly to children of this age. Well written stories of the voyages of Columbus; of the expeditions of Drake and De Soto; of the work of La Salle and Marquette; of the landing of the Pilgrims; of the founding of Jamestown and St. Augustine; the winning of the West; the stories of David Crockett, Daniel Boone, and George Rogers Clark have a very great fascination for the child at this age and will be retained with remarkable tenacity. This is the "blood and thunder" age of the child. He will follow out in detail the manœuvers of an army, the rough plan of a campaign, the results of battles with more delight and often with more accuracy than he will at a later stage. One reason why so much of the time given to wars by older students instead of to interpretation and historical documents on the ground that there is no time for the latter is, that the former were not taught when they should have beeu taught. Any normal child who has had rational training up to the age of ten will read the battles of the American Revolution from Lexington and Concord to Yorktown with approximately as much understanding and infinitely more pleasure and enthusiasm than he will at twenty. Only let the history be authentic and written decently, and do not piecemeal it but let it be read, a whole campaign or a whole war at a time. No wonder a child loses interest and enthusiasm when the lesson closes in the middle of a retreat and the child is punished for reading beyond the prescribed limits of the assignment.

Biography should constitute a large part of the history course at this time. The strong interest in human life and activity so characteristic of the earlier stage has not waned. A majority of our children come from the public schools after three or four years spent in the study of some text-book history without any very definite idea of any of it. If we would but take advantage of their normal interests and introduce them to the lives of the men and women who have made history, the results obtained would be more in proportion to the time and energy spent. It would be unwise perhaps to advocate biography exclusively for this stage but I have no doubt that if the average ten-year-old child could have access to the biographies of twenty of the most influential citizens of our country, representative of different times and movements, his real knowledge of our history would be as far in excess of what it usually is as a mountain exceeds a mole hill. In the life of Washington alone he would be introduced to colonial government, the French and Indian war, attempts at union, the colonial and continental congress, the various grievances of the colonies, the declaration of independence, government under the articles of confederation, the

revolutionary war, the adoption of the constitution, the birth of the government, the division of the people into parties, etc., etc. The aim must be to present the work in a connected form. It will be time enough to cross section it and bring together everything that happened everywhere in a given year after the children have the longitudinal lines laid. We must have the historical warp before we try to put in the historical woof.

Manual work adapted to the development of the child should constitute a regular part of the programme during this stage. Just what this work should be, external circumstances and the interest and ability of the child must determine, but in most cases drawing, carving and similar exercises requiring not too fine an adjustment of the muscles are desirable. And this is above all things the time for practice and drill in those lines of muscular activity that are to become habitual. The child who is to become an expert pianist, or violinist for example, should devote these years to laborious drill upon these instruments. Work in voice culture should be begun at this time, although judicious care needs to be exercised later when the voice is "changing" to prevent permanent injury. The one who is to have complete mastery of his body, of the physical movements, must not neglect the work in physical culture. There is no time in one's life when it is so true that "as you live now will determine how you will always live," as this time.

I have in the pedagogical discussions studiously avoided dogmatism. It would argue a lack of comprehension of the entire subject to say that at a given time such and such parts of such and such subjects and nothing else should be given. I have merely tried to show that many things the schools are trying to do at certain times are out of place and have tried to show what would be better. I have, therefore, in displacing some of the standard studies (reading, arithmetic, etc.,) before seven years of age suggested some lines of work that are suitable for this time without drawing a line between the things that must and the things that must not be done. Indeed I should be surprised if there are not many things unnoticed in that discussion that should have a place in the curriculum. The purpose was simply to work out the principle and illustrate rather fully. And so, in the discussion of work for this stage from nine to twelve or thirteen, it cannot be said what are all the things that may be done and all that may not. But I have taken up the subjects that were discarded in the previous stage and have tried to show that they should now have quite a prominent place in the curriculum, and have made suggestions as to the nature of all the work for the entire period without any attempt to go into details. The results of my observations and studies have led me to this conclusion in regard to the work

for the two stages ending at seven or eight and twelve or thirteen respectively, that the work in the earlier stage as a rule is too heavy and that too much is expected of the child; and that the work of the later stage is too light and too little *required* of the child. I wish in conclusion to emphasize the fact that many of the fundamentals in training of all kinds can be gotten only through service, through long continued application and that there is no time in the life of the individual so well suited from the standpoints of mental capital and development, and physical capital and development to drill work as the years just preceding the dawn of adolescence.

I desire to express, here, my thanks to President G. Stanley Hall and Dr. William H. Burnham for valuable suggestions and criticisms, and to Mr. Louis N. Wilson, Librarian of Clark University, for his cordiality and help in securing literature upon the subject.

No attempt has been made in this paper to treat the adolescent period. For this the reader is referred to President G. Stanley Hall's forthcoming work on the subject.

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